Innovative Approaches: Water Management for the Bay Area

Brought to You By:

Alameda County Water District (ACWD)

Bay Area Water Supply & Conservation Agency (BAWSCA)

City of Napa (Napa)

Contra Costa Water District (CCWD)

East Bay Municipal Utility District (EBMUD)

Marin Municipal Water District (MMWD)

San Francisco Public Utilities Commission (SFPUC)

Santa Clara Valley Water District (SCVWD)

Solano County Water Agency (Solano CWA)

Sonoma County Water Agency (Sonoma CWA)

Zone 7 Water Agency (Zone 7)

Printed March 2005

ACWD
ALAMEDA COUNTY WATER DISTRICT

EAST BAY
MUNICIPAL
UTILITY DISTRICT

SOLANO WATER
• WASTE NOT • WANT NOT •

WATER RESOURCES
ZONE 7
MANAGEMENT

CONTRA COSTA
WATER DISTRICT

CITY of
NAPA

Santa Clara Valley
Water District

BAWSCA
Bay Area Water Supply & Conservation Agency

MARIN MUNICIPAL
WATER DISTRICT

SONOMA
COUNTY
WATER
AGENCY

Table of Contents

The Bay Area:
A Vital and Dynamic Region 2

Bay Area Water Management:
A History of Collaboration and Innovation 4

Conservation:
Advancements in Demand Management 6

Protective Measures:
Ensuring High Quality, Reliable Supplies from Source to Tap 8

Recycled Water:
Reusing Supplies to Achieve Multiple Benefits 10

Desalination:
A Viable Drinking Water Supply 12

Conjunctive Use:
Optimizing Surface and Groundwater Supplies 13

Groundwater Banking and Water Transfers:
Enhancing Operational Flexibility 14

Bay Area Water Management:
Integrating for the Future 15

Brought To You By 16

The Bay Area:

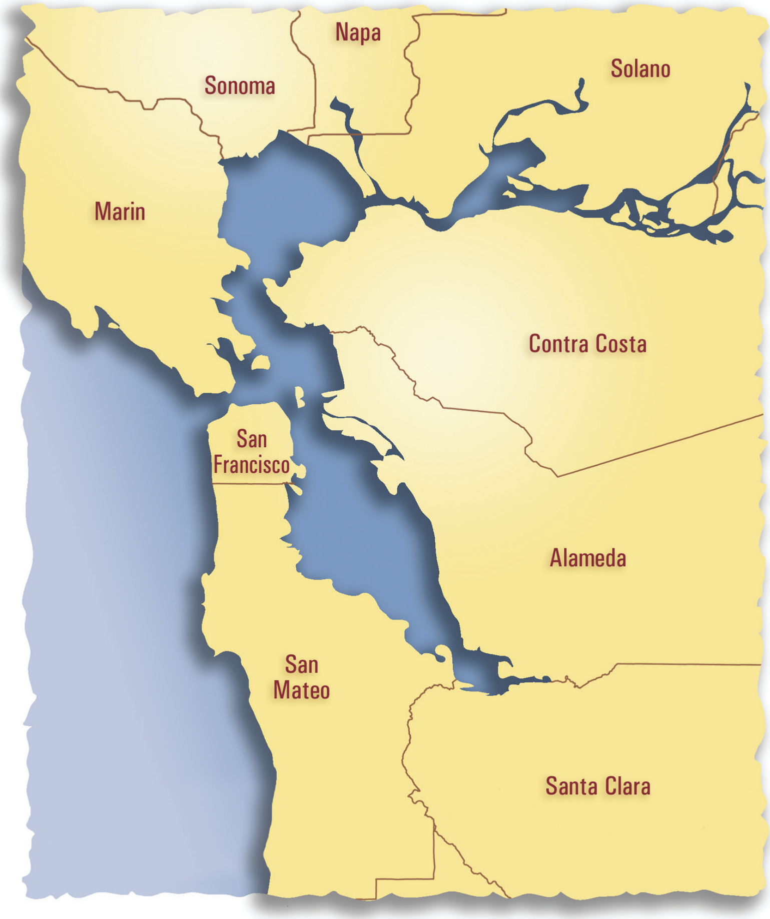
A Vital and Dynamic Region

The San Francisco Bay Area is an economically and environmentally important region for California, the nation, and the world. With over six and a half million people, the Bay Area is the fifth largest metropolitan area in the United States.

The Bay Area economy of almost $300 billion ranks as the 24th largest economy in the world. On a per capita basis, it ranks ahead of all national economies, including the United States. The region is at the cutting edge of global technology, and is a leader in many key indicators of regional, global and national competitiveness.

The Bay Area is also part of the San Francisco Bay/Sacramento-San Joaquin Delta system, the largest estuary on the west coast of North and South America. This environmentally sensitive ecosystem supports over 750 plant and animal species, and is a waterfowl migration and wintering area of international importance. The Bay-Delta also provides drinking water to over two-thirds of Californians, and irrigation water for more than 7 million acres of the most productive agricultural land in the world.

High quality, reliable water supplies are a critical underpinning to the Bay Area's prosperity and continued leadership in economic development and environmental protection. Bay Area water agencies seek to protect the quality and reliability of existing supplies through innovative water management strategies and regional cooperation.



Bay Area Numbers:

9 Counties

100 Cities

6.6 Million People

5th largest metropolitan area in the US

24th largest economy in the world

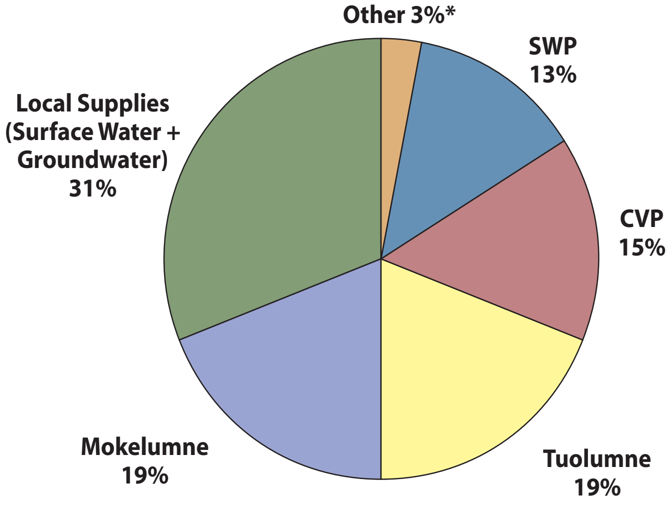
Largest estuary on west coast of North and South America

Bay Area water agencies manage a diverse portfolio of water supplies including:

- Local Supplies: Groundwater, Surface Water
- Sierra Nevada Supplies: Tuolumne, Mokelumne
- Delta Supplies: State Water Project (SWP), Central Valley Project (CVP), other
- Desalination
- Recycled Water

The Bay Area's existing water supplies are sufficient to meet current demands under normal hydrologic conditions. However, if the Bay Area experiences another drought similar to the critically dry year of 1977 or the multi-year drought period of 1987-1992, existing water supplies will not be able to meet the needs of the Bay Area region. The gap between available supplies and customer demand will only widen as more people live and work in the Bay Area in the coming decades unless appropriate actions are taken.

Bay Area Water Use by Supply Source



**Other sources include water transfers, recycled water, etc.*

Bay Area water agencies also face the challenge of protecting and enhancing the quality of these water supplies and continually investing in water infrastructure improvements to ensure reliable delivery of water to their customers.

Bay Area water agencies are engaged in proactive, comprehensive water management planning efforts to address these challenges. This brochure outlines the collaborative and innovative approaches that Bay Area water agencies are taking to ensure the quality and reliability of the region's supplies.

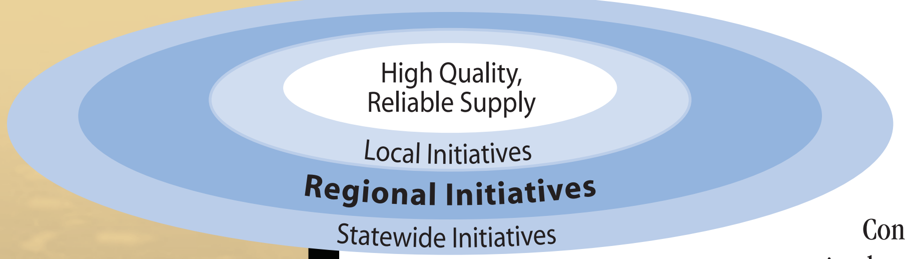
A multi-year drought will significantly reduce the availability of Bay Area supplies:

- SWP (60% reduction)
- CVP (25% reduction)
- Tuolumne (30% reduction)
- Mokelumne (40% reduction)
- Local Supplies (50% +/- reduction)

Bay Area Water Management:
A History of Collaboration and Innovation

All Bay Area water agencies face similar challenges relating to water supply reliability and vulnerability needs - and they recognize the importance of working together to identify approaches and solutions to these challenges. As such, Bay Area water agencies have a history of collaborating with other agencies, stakeholders and environmental groups to improve overall effectiveness of water management. Starting with programs and projects implemented at the local level and expanding to regional and state initiatives, Bay Area collaborative efforts help all agencies achieve high quality, reliable supplies.

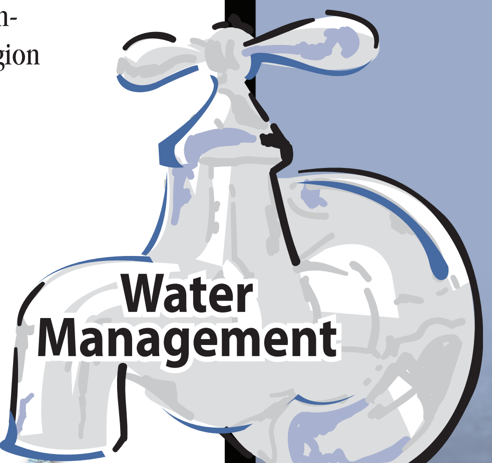
A number of regional efforts are underway to better meet local needs and the needs of the region as a whole:



- **Water Use Efficiency.** Water use efficiency in the Bay Area is promoted through aggressive conservation and recycling efforts. In addition to individual agency programs, most Bay Area water agencies are members of the California Urban Water Conservation Council (CUWCC) and all have committed to implementing conservation Best Management Practices whenever feasible. In addition, several Bay Area agencies are collaborating on water recycling by participating in the Bay Area Regional Water Recycling Program (BARWRP).
- **Water Resource Management.** Bay Area agencies continue to collaborate on water resource management through participation in organizations such as the Bay Area Water Agencies Coalition (BAWAC), the North Bay Watershed Association (NBWA), the Russian River Watershed Association (RRWA), and Bay Area Water Agencies Forum (BAWAF).
- **Advanced Technology Research.** The Bay Area's Delta water users have assembled an innovative partnership with the U.S. EPA and the American Water Works Association Research Foundation to perform research on promising treatment technologies for Delta water.
- **Watershed Protection.** Agencies are working with regulators, environmental groups and stakeholders to protect and promote stewardship of all the watersheds including the Tuolumne, Mokelumne, Santa Clara Basin, North San Pablo Bay, Russian River, Alameda and Peninsula watersheds.
- **Salinity Management.** Many Bay Area agencies have formally joined together as the Northern California Salinity Coalition (NCSC) to identify regional approaches for addressing salinity impacts and to promote desalination and groundwater salinity management.
- **Security.** Coordination on water security issues is being accomplished in part through a regional partnership of large water agencies known as the Bay Area Security Information Collaborative (BASIC).

Regional efforts enable Bay Area water agencies to capitalize on collective resources, expertise and knowledge in order to achieve water quality and supply reliability goals.

Regional initiatives allow agencies to pool their resources, share lessons learned, and develop new means to achieve economic, institutional and technical objectives. Collaborative efforts will continue to be an important part of Bay Area water management as the agencies strive to sustain an enhanced quality of living in the Region through comprehensive, cost-effective management of water resources in an environmentally sensitive manner.



Water Management

The foundation of the Bay Area's comprehensive water management strategy includes a commitment to:

1. ***Reduce demand by aggressively advancing water conservation in the Bay Area.***

   Bay Area water agencies are actively involved in implementing water-efficient measures and raising public awareness about the need to conserve water supplies through more efficient practices. These aggressive conservation efforts help to reduce water demands and conserve the Bay Area's valuable drinking water supplies.

2. ***Protect the quality and reliability of existing water supplies.***

   Bay Area water agencies understand the importance of preserving existing supplies. Various efforts undertaken to protect the quality and reliability of these supplies include: source water quality protection, advanced treatment, investments in infrastructure, use of inter-agency connections (or intertie connections) and enhanced security measures.

3. ***Improve water supply reliability through innovative water management approaches.***

   Innovative water management approaches enable Bay Area water agencies to further improve water supply reliability. These strategies include, but are not limited to:

   - achieving multiple benefits through recycled water;
   - creating new potable supplies through desalination; and
   - optimizing existing supplies through groundwater banking, conjunctive use, and water transfers.

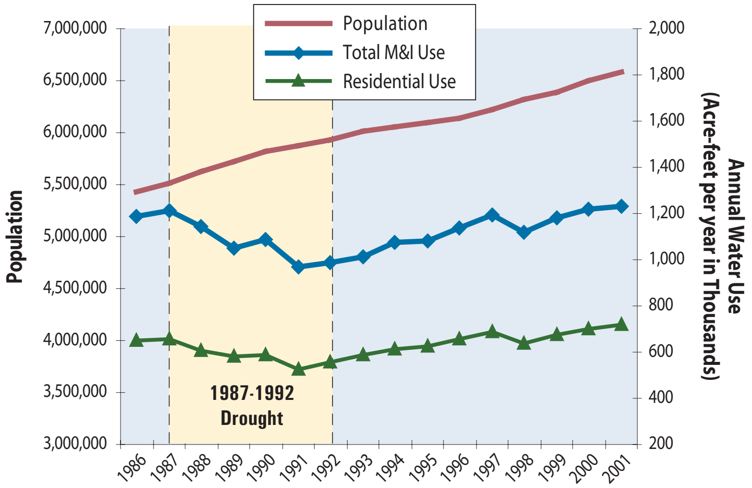
Bay Area water agencies are committed to pursuing innovative water management strategies to ensure high quality, reliable supplies for existing and future customers.

Conservation:

Advancements in Demand Management

A minimal increase in water use over the past 20 years demonstrates the effectiveness of the Bay Area's water conservation efforts.

Effective conservation measures have helped to control Bay Area water use, despite continued population growth.



The population served by the 11 water agencies highlighted in this brochure has increased from approximately 5.4 million in 1986 to nearly 6.6 million in 2001.

Despite this growth, Bay Area water use has shown the following trends:

- Although the Bay Area population has increased by 21 percent since 1986, municipal and industrial (M&I) water use has only increased by 3 percent, and residential use has only increased by 10 percent.
- Effective conservation measures implemented during the 1987-1992 drought helped to reduce M&I water use by more than 18 percent.
- Despite increased suburban development and economic growth in the 1990's, overall water use showed only modest growth compared with pre-drought levels.

Bay Area water agencies are committed to continued achievements in conservation savings.

Bay Area water agencies have pledged to implement best management practices outlined in the California Urban Water Conservation Council's Memorandum of Understanding (MOU) regarding urban water conservation whenever feasible. Bay Area water agencies are building on the success of on-going water conservation efforts and anticipate that additional water savings will be made possible through:

- New conservation programs that improve water use efficiency in residential and commercial markets
- Technological advances in water efficient devices
- Increased knowledge of the customers' water use behaviors
- Increased commitment for conservation funding
- Continued reinforcement of water conservation awareness

The following provides a few examples of acclaimed water conservation programs in the Bay Area:

Improving Landscape Irrigation. Bay Area water agencies have implemented several programs to maximize efficiency of irrigation water use. These efforts include, but are not limited to: outdoor residential surveys, large landscape audits, landscape workshops, submetering programs, and irrigation retrofits. In addition, advancements in Geographic Information Systems (GIS) technology have enabled many agencies to develop site-specific recommendations for irrigation schedules and water budgets based on evapotransporation data and the square footage of irrigated landscaping.

Raising Water Conservation Awareness. Throughout the Bay Area, water agencies are leading efforts to raise awareness about water conservation through educational programs and other public outreach efforts. The *Our Water* and *Water Education* programs are both nationally recognized, award-winning programs that reach school children to establish conservation awareness at a young age. The water conservation message is also conveyed to Bay Area residents through brochures, public service announcements, billing inserts, publications, displays at public events, and water conservation demonstration gardens.

H2O HOW-2
2004 Bay Area Water Utility Clothes Washer Rebate Program
EBMUD Large-Landscape Irrigation Audit & Rebate Program
Let's Talk "Water"
Saving Water Indoors
Toilets
Laundry
SFPUC
Water Wise MakeOver
What YOU Need to Know About Recycled WATER
New! Water-Wise Home Surveys

Enhancing Water Use Efficiencies. Bay Area water agencies have extensive residential, commercial and industrial programs to enhance water use efficiencies. Residential water use surveys have been conducted by Bay Area water agencies for over a decade to assess household water use, detect leaks, and identify ways to improve overall water use efficiency. Along with these surveys, agencies offer free installation of low-flow showerheads and faucet aerators to residents. Similar water use surveys are available for commercial establishments. In addition, both residential and commercial water users take advantage of rebates offered through water agencies toward the purchase of water-saving appliances, such as ultra-low flow toilets and high-efficiency washing machines.

The conservation efforts of the Bay Area have resulted in a showcase of acclaimed programs.

Protective Measures:

Ensuring High Quality, Reliable Supplies from Source to Tap

Protecting existing supplies and promoting environmental stewardship are some of the first steps towards achieving sustainability for future water supplies. The need for protection begins at the source and continues to the tap. Bay Area water agencies have a range of important programs to actively protect source water quality including watershed monitoring, groundwater monitoring and protection programs, source water assessments, advanced treatment, demineralization programs, and non-point source programs.

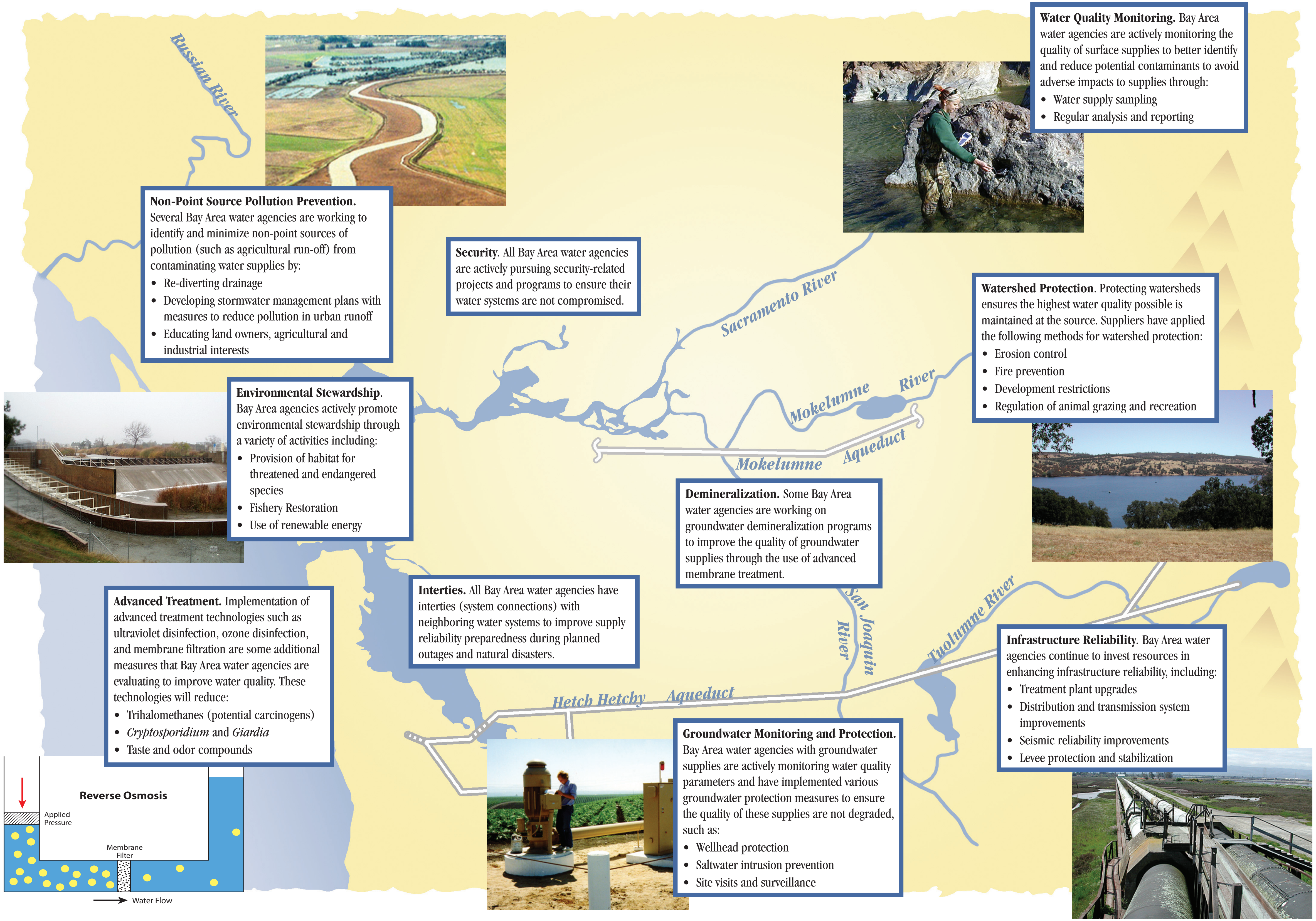
A commitment to protection:

Advanced Treatment

- Ultrafiltration at Mission San Jose Water Treatment Plant (WTP)
- Ozonation at Bollman and Randall Bold WTPs
- Hetch Hetchy Advanced Disinfection-UV
- Membrane Filtration at Patterson Pass WTP
- SCVWD Treated Water Improvement Project
- City of Napa TOC Removal Study
- Desalination Research and Innovative Partnership
- Bay Area Advanced Treatment of Delta Water Research Project

Demineralization

- Peralta-Tyson Groundwater Treatment Facility
- Zone 7 Groundwater Demineralization Project



Non-Point Source Pollution Prevention. Several Bay Area water agencies are working to identify and minimize non-point sources of pollution (such as agricultural run-off) from contaminating water supplies by:

- Re-diverting drainage
- Developing stormwater management plans with measures to reduce pollution in urban runoff
- Educating land owners, agricultural and industrial interests

Security. All Bay Area water agencies are actively pursuing security-related projects and programs to ensure their water systems are not compromised.

Environmental Stewardship. Bay Area agencies actively promote environmental stewardship through a variety of activities including:

- Provision of habitat for threatened and endangered species
- Fishery Restoration
- Use of renewable energy

Advanced Treatment. Implementation of advanced treatment technologies such as ultraviolet disinfection, ozone disinfection, and membrane filtration are some additional measures that Bay Area water agencies are evaluating to improve water quality. These technologies will reduce:

- Trihalomethanes (potential carcinogens)
- *Cryptosporidium* and *Giardia*
- Taste and odor compounds

Interties. All Bay Area water agencies have interties (system connections) with neighboring water systems to improve supply reliability preparedness during planned outages and natural disasters.

Water Quality Monitoring. Bay Area water agencies are actively monitoring the quality of surface supplies to better identify and reduce potential contaminants to avoid adverse impacts to supplies through:

- Water supply sampling
- Regular analysis and reporting

Watershed Protection. Protecting watersheds ensures the highest water quality possible is maintained at the source. Suppliers have applied the following methods for watershed protection:

- Erosion control
- Fire prevention
- Development restrictions
- Regulation of animal grazing and recreation

Demineralization. Some Bay Area water agencies are working on groundwater demineralization programs to improve the quality of groundwater supplies through the use of advanced membrane treatment.

Groundwater Monitoring and Protection. Bay Area water agencies with groundwater supplies are actively monitoring water quality parameters and have implemented various groundwater protection measures to ensure the quality of these supplies are not degraded, such as:

- Wellhead protection
- Saltwater intrusion prevention
- Site visits and surveillance

Infrastructure Reliability. Bay Area water agencies continue to invest resources in enhancing infrastructure reliability, including:

- Treatment plant upgrades
- Distribution and transmission system improvements
- Seismic reliability improvements
- Levee protection and stabilization

A commitment to protection:

Watershed Protection

- Lake Berryessa Watershed Partnership
- Mt. Tamalpais Watershed Fund
- Alameda Creek Watershed Protection
- Mokelumne Watershed Protection
- Tuolumne Watershed Protection
- Santa Clara Basin Watershed Management Initiative
- Russian River Watershed Protection

Infrastructure Reliability

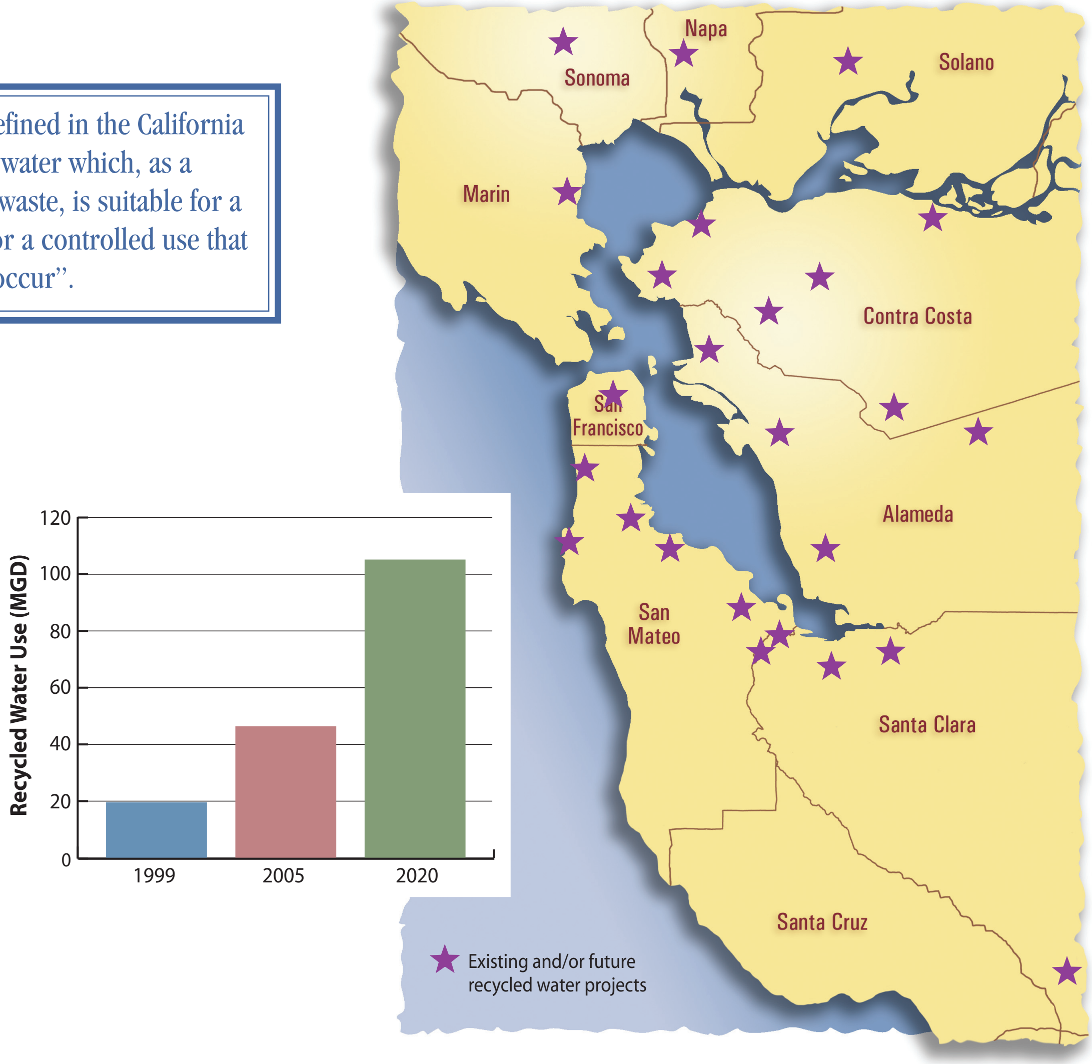
- CCWD Seismic Reliability Improvement Program
- SFPUC Capital Improvement Program
- EBMUD Seismic Improvement Program
- Solano CWA Highline Canal Study
- SCVWD Water Infrastructure Management Program
- EBMUD-SFPUC Hayward Intertie
- SFPUC-SCVWD Milpitas Intertie

Recycled Water:

Reusing Supplies to Achieve Multiple Benefits

Bay Area water agencies are poised to expand the production and use of recycled water to ensure future generations have a reliable water supply equivalent to what customers have today. Currently, nearly 50 million gallons per day (MGD) of recycled water is produced in the Bay Area. Future planned projects will increase this number to over 100 MGD by 2020.

Recycled water is defined in the California Water Code to mean "water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur".



Bay Area water agencies have successfully implemented recycled water projects and many more are on the drawing board.

Bay Area water agencies derive multiple benefits from recycled water:

- It provides a reliable, drought-proof supply
- It reduces dependence on imported supplies
- It restores and preserves salt-water and tidal marshland habitats

Bay Area water agencies continue to take proactive measures to ensure that recycled water is of the highest quality and does not adversely affect water supplies and environmental resources.

Recycled water undergoes additional treatment processes beyond what is required for standard wastewater management. Bay Area water agencies continue to conduct critical research on the effects of recycled water and implement measures to ensure proper and beneficial recycled water use. These efforts will safeguard groundwater supplies and environmental resources from any adverse impacts from the use of recycled water.

Bay Area water agencies recognize recycled water as an important component of their long-term water supply strategy. Some highlights of on-going efforts are presented below:

The Chuck Corica Golf Complex in Alameda is kept green with recycled water from EBMUD.

- **East Bay Municipal Utility District.** EBMUD has been using recycled water since the 1970s. EBMUD currently has an extensive recycled water program providing 8 MGD of water for industrial and irrigation needs and plans to double current production to 14 MGD by 2020.
- **Contra Costa Water District.** CCWD currently has agreements with two local wastewater agencies to provide recycled water for appropriate uses including industrial cooling tower supplies and large landscape irrigation. Approximately 10 MGD of recycled water is currently used in the CCWD service area and evaluations of additional opportunities are ongoing.
- **Marin Municipal Water District.** MMWD began operating a 1-MGD tertiary treatment plant in 1981 and has been a pioneer in promoting the production and use of recycled water. MMWD was the first in the state to provide recycled water for car washes, air-conditioning cooling towers, and commercial laundries. Today, MMWD delivers up to 2 MGD of recycled water to 325 customers.
- **Palo Alto Water Reuse Program.** The Palo Alto Regional Water Quality Control Plant has provided over 10 Billion gallons of recycled water to customers since 1980. The RWQCP currently produces 1.5 MGD and is moving forward with plans to expand production to serve other areas in Palo Alto as well as in the neighboring community of Mountain View.
- **Sonoma County Water Agency.** Sonoma CWA manages 10 wastewater treatment plants that currently provide recycled water for urban and agricultural irrigation. Plans are being developed to expand recycled water deliveries by as much as 9 MGD for vineyard irrigation and habitat restoration in the Sonoma Valley area.
- **South Bay Water Recycling.** SBWR is a joint program for the cities of San Jose, Santa Clara and Milpitas that currently produces 7.2 MGD of recycled water for irrigation and industrial customers. Santa Clara Valley Water District has been a partner in this program since 1994, and is actively involved in future plans to expand the system.
- **City of Daly City.** Daly City began operating a tertiary treatment plant in August 2004 to produce 2.77 mgd of recycled water. Use of recycled water for irrigation of nearby golf courses, parks and medians helps to preserve the local groundwater aquifer for potable purposes.
- **City of Napa/Napa Sanitation District.** Currently, there are five large recycled water irrigation customers within the City of Napa service area. Plans are in place to increase recycled water use to 0.5 mgd, representing more than 3% of the City's demand.

Using recycled water for irrigation reduces freshwater discharges to Palo Alto's saltwater marshlands, thereby preserving a sensitive habitat.

Desalination:

A Viable Drinking Water Supply

Desalination has become a viable option for Bay Area water agencies due to technological advancements and increased affordability. To diversify their water supply portfolio and bridge the supply gap during shortages, Bay Area agencies have increasingly looked to desalination as an additional option. Desalination offers:

- A new source of potable water supply
- High quality water, even during periods of drought
- A local supply under local control
- Reduced dependence on imported supplies

Bay Area desalination programs include:

- **Alameda County Water District.** ACWD owns and operates the Newark Desalination Facility. The 5-MGD facility uses reverse osmosis to remove salts and other minerals from brackish groundwater. The resulting high quality water is blended with other supplies and delivered to residents and businesses in Newark, Fremont, and Union City, providing about 10% of ACWD's existing water supply needs.
- **Marin Municipal Water District.** MMWD began environmental studies in 2003 for a 15-MGD baywater desalination plant located on San Quentin Peninsula. Due to the phased nature of the MMWD's integrated planning effort, the plant will be constructed in 5-MGD increments. Additional pilot studies will take place in the next year, with approval expected by early 2005. Water from the plant will alleviate growing pressures on MMWD's water supply.

Desalination uses reverse osmosis filters to remove salt from water.

- **Bay Area Regional Desalination Project.** Four Bay Area water agencies (CCWD, EBMUD, SFPUC, and SCVWD) recently completed a preliminary study to explore the viability of a regional desalination facility in the Bay Area.
- **Northern California Salinity Coalition (NCSC).** A group of ten Bay Area water and wastewater agencies (ACWD, CCWD, DDSD, EBMUD, MMWD, SFPUC, SCVWD, Solano CWA, Sonoma CWA, and Zone 7) have formed the NCSC to identify regional approaches to address salinity issues, including desalination.

Bay Area water agencies are supporting the development of cost-effective and environmentally sensitive desalination projects to improve water quality and supply reliability.

Desalination refers to the process of removing salt from water (such as the ocean, bay, and brackish groundwater) to produce a potable water supply.

Conjunctive Use:

Optimizing Surface and Groundwater Supplies

Conjunctive Use programs offer multiple benefits:

- Optimizes groundwater and surface water resources
- Protects groundwater from overdraft and subsidence
- Prevents salt-water intrusion
- Enhances natural recharge of the groundwater basin
- Promotes local control and provides emergency storage

Conjunctive Use is the coordinated and planned use of surface water in conjunction with groundwater. It involves the use and/or storage of excess surface water supplies in local groundwater basins so that groundwater can be withdrawn when additional supplies are needed.

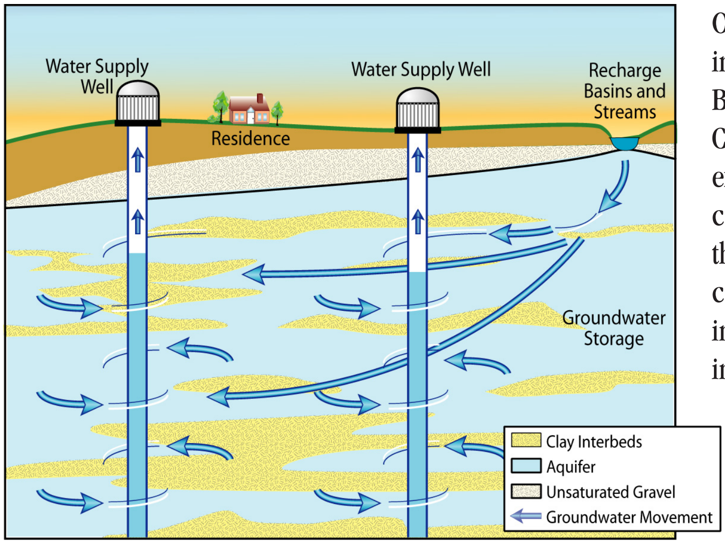
Conjunctive Use plays an important role in the water management efforts of several Bay Area agencies.

ACWD has implemented an active local conjunctive use program that involves maximizing the use of SFPUC and State Water Project surface water supplies and storing excess surface water in the Niles Cone Groundwater Basin. The program involves the use of the Alameda Flood Control Channel and inflatable dams to capture and divert local Alameda Creek Watershed supplies and South Bay Aqueduct releases to the Quarry Lakes where water percolates into the groundwater basin.

ACWD's groundwater percolation facilities provide local water supplies and prevent seawater intrusion.

SCVWD has implemented an active conjunctive use program since the 1930s. To replenish groundwater basins, SCVWD releases local and imported surface water along 70 miles of stream channels and into 71 ponds ranging in size from less than one acre to more than 20 acres.

Zone 7 has had an active groundwater conjunctive use program in place for over 40 years. This program involves the delivery of State Water Project water to water treatment plants and the release of SWP water from the South Bay Aqueduct into local streams during the spring, summer and fall months when the streams typically run dry.



Other Bay Area agencies, including EBMUD, SFPUC, BAWSCA members, and Solano CWA, are conducting studies to explore the future possibilities of conjunctive use. One example is the Westside Groundwater Basin conjunctive use project which involves using SFPUC water instead of pumping groundwater in normal/wet years so that more groundwater is available during dry years.

Conjunctive use enables Bay Area water agencies to effectively manage groundwater and surface water resources.

Groundwater Banking and Water Transfers

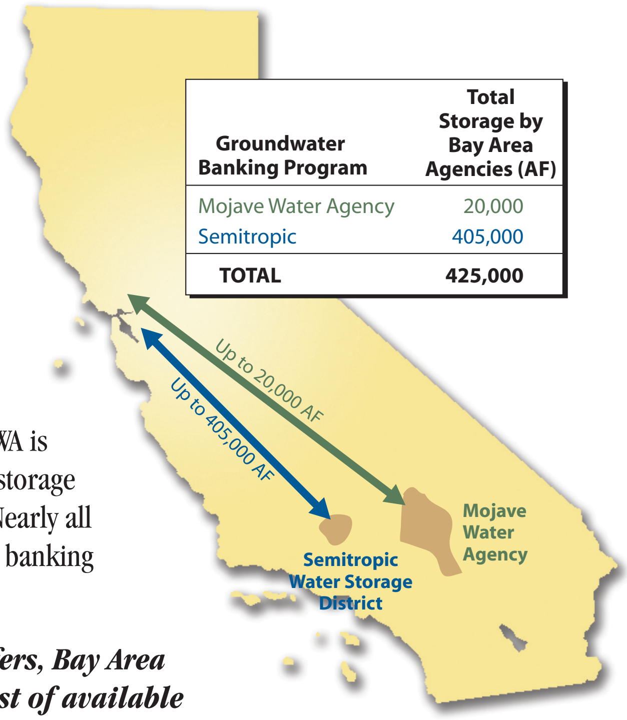
Enhancing Operational Flexibility

Taking advantage of groundwater banking and water transfer opportunities offers the following benefits to Bay Area water agencies:

- Improves operational flexibility and efficiency
- Provides additional dry year supply reliability
- Allows agencies to be part of the statewide solution in sustaining groundwater resources.

Groundwater banking and water transfers increase the water supply available to Bay Area water agencies and offer improved operational flexibility, especially during periods of drought.

Bay Area water agencies participate in groundwater banking to improve drought supply reliability, operational flexibility and efficiency. Several Bay Area water agencies utilize groundwater banking to supplement local conjunctive use and storage programs. ACWD, SCVWD and Zone 7 currently utilize the off-site groundwater storage in the Semitropic Water Storage District located in Kern County. Solano CWA is currently participating in a groundwater storage program with the Mojave Water Agency. Nearly all Bay Area water agencies are investigating banking options for the future.



Groundwater Banking Program	Total Storage by Bay Area Agencies (AF)
Mojave Water Agency	20,000
Semitropic	405,000
TOTAL	**425,000**

Through collaborative water transfers, Bay Area water suppliers are making the most of available water supplies. Water transfers allow suppliers with excess water supplies to sell their water to those agencies in need. CCWD, SCVWD, Zone 7 and Solano CWA all participate in water transfers:

- CCWD has a long-term transfer of surplus irrigation water from East Contra Costa Irrigation District, a deal that keeps the surplus water in the county, helps keep rates affordable for farmers, and provides a reliable supply to CCWD.
- SCVWD participates in short-term water transfers and exchanges and has also entered into two long-term water transfer agreements to improve dry year reliability: a CVP Joint Contract Assignment with Pajaro Valley Water Management Agency and Westlands Water District; and the Water Reallocation Agreement with CVP agricultural contractors.
- Long-term agriculture-to-urban water transfers have enabled Zone 7 to increase its SWP entitlement from 46,000 to 80, 619 AFY. Zone 7 also has a 15-year contract with Byron Bethany Irrigation District to provide up to 5,000 AFY of additional supply.
- There are several agreements for water transfers within the group of Solano CWA water contractors including (1) the Solano Irrigation District/City Agreements; (2) the Solano Project Drought Measures Agreement; and (3) Vallejo agreements.

Groundwater Banking involves the "deposit" of excess surface water supplies into off-site groundwater banks during wet and dry years for subsequent "withdrawal" when additional water supplies are needed.

Water Transfers usually involve the transfer of water rights, contractual rights, or dry year options to increase supplies.

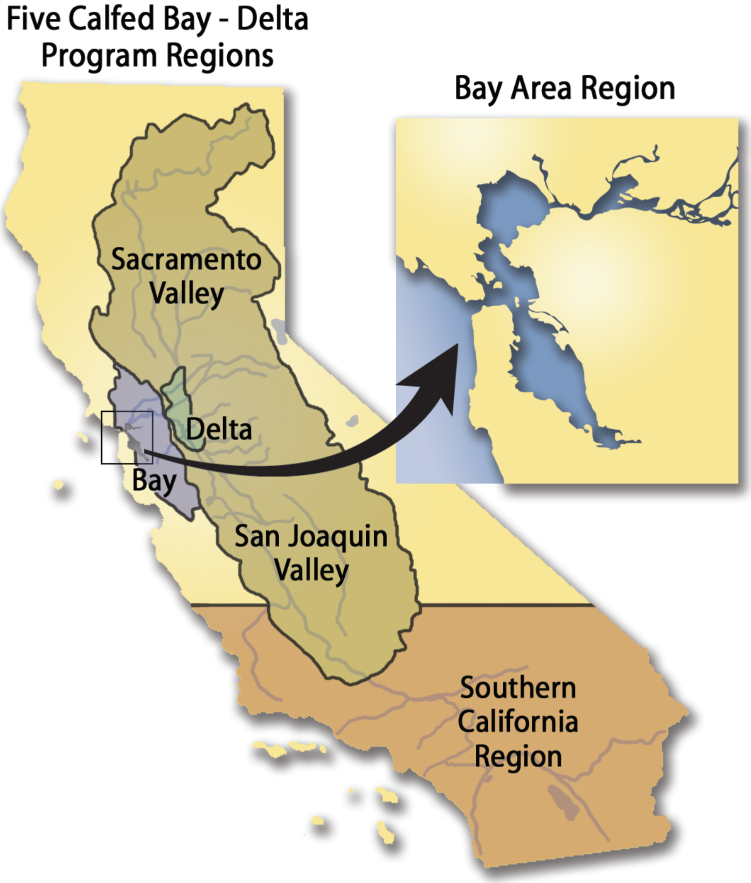
Bay Area Water Management:

Integrating for the Future

Bay Area water agencies are engaged in proactive, innovative water management efforts to ensure high quality, reliable supplies – a critical underpinning to the Bay Area's prosperity and continued leadership in economic development and environmental protection. The foundation of the Bay Area's comprehensive water management strategy includes a commitment to:

1. **Reduce demand by aggressively advancing water conservation in the Bay Area.** Bay Area conservation efforts have resulted in a showcase of acclaimed programs and have helped to limit the increase in overall water use to just 3%, despite a 21% increase in population since 1986. Bay Area water agencies are committed to building on the success of ongoing efforts to achieve additional savings through advancement of conservation.
2. **Protect the quality and reliability of existing water supplies.** Bay Area water agencies understand the importance of protecting the quality and reliability of existing water supplies and have implemented key programs related to source water protection, advanced treatment, infrastructure reliability, and security.
3. **Improve water supply reliability through innovative water management strategies.** Bay Area water agencies are taking innovative approaches to further improve water supply reliability by implementing recycled water, desalination, groundwater banking, conjunctive use and water transfer programs.

Bay Area water agencies recognize the need for coordination and mutual support in planning for the region. As such, Bay Area agencies are currently working on a Bay Area Integrated Regional Water Management Plan to outline their comprehensive approach to addressing the water quality and water supply reliability needs of the region. In addition, Bay Area agencies are working collaboratively to review and influence planning by other entities, such as Calfed, that may affect water resources in the region. Through continued cooperation and collaboration, the water needs of the Bay Area can be met today and into the future.



Bay Area Water Agencies will continue to work together to develop comprehensive, integrated water management strategies to improve water supply reliability and water quality.

Brought to You By:

This brochure on innovative approaches to Bay Area water management is a collaborative effort involving 11 major Bay Area water agencies.

Alameda County Water District

For more than 90 years, the Alameda County Water District (ACWD) has supplied water to the residents and businesses of southern Alameda County. Today, ACWD supplies drinking water to the more than 318,000 people living in the cities of Fremont, Newark, and Union City. ACWD was the first water district in Northern California to implement brackish water desalination - evidence of the District's commitment to provide high quality, reliable water supplies to its customers.

Bay Area Water Supply and Conservation Agency

The Bay Area Water Supply and Conservation Agency (BAWSCA) represents the interests of 26 cities and water districts, and two private utilities that purchase water on a wholesale basis from the San Francisco Public Utilities Commission (SFPUC) regional water system. BAWSCA's goals are to ensure high quality, reliable water supply for the 1.7 million people residing in Alameda, Santa Clara, and San Mateo counties that depend on the SFPUC regional water system.

City of Napa

The City of Napa has been providing water to its residents for more than 80 years. Today, Napa manages local and imported supplies to provide safe, reliable, and high quality water to 81,000 residents in and around the city limits. Napa uses recycled water supplied by the Napa Sanitation District and has an extensive water conservation program aimed at reducing per capita demand by 10% by 2020. The City of Napa is committed to infrastructure and water supply reliability for current and future generations to maintain the unique quality of life that is Napa.

Contra Costa Water District

The Contra Costa Water District (CCWD) serves approximately 500,000 people in north, central, and east Contra Costa County. CCWD acts as both a retail and wholesale water distributor, delivering treated drinking water directly to customers and untreated water to retail water agencies and major industries. Formed in 1936 to provide water for irrigation and industry, CCWD is now one of the larger urban water districts in California and a leader in water treatment technology and source water protection.

East Bay Municipal Utility District

Formed in 1923, the East Bay Municipal Utility District (EBMUD) supplies high-quality water and provides wastewater treatment for approximately 1.3 million people in a 325-square-mile area covering parts of Alameda and Contra Costa counties. EBMUD's comprehensive water conservation and recycling programs are a key part of its commitment to water supply reliability. In fact, EBMUD has one of the largest conservation programs in California and was one of the first water utilities in the nation to develop a water conservation master plan.

Marin Municipal Water District

The Marin Municipal Water District (MMWD) has been providing high-quality drinking water to residents in Marin County for nearly a century. Today, MMWD serves 185,000 people in a 147-square-mile area of Marin County, and has been at the forefront of new water technologies such as recycled water in order to satisfy the demands of their water users. MMWD's mission is to provide customers with reliable, high quality water and to ensure the fiscal and environmental vitality of their service area for future generations.

San Francisco Public Utilities Commission

The San Francisco Public Utilities Commission owns and operates a regional water system that provides and delivers water to its 28 wholesale customers and its retail customers. SFPUC also provides wastewater service and municipal power to the City of San Francisco. The SFPUC serves the approximately 775,000 residents of San Francisco, as well as about 1.7 million residents of Santa Clara, Alameda, and San Mateo counties. Currently, the SFPUC is implementing an extensive capital improvement program to repair, replace, and seismically upgrade the water system's aging infrastructure to ensure reliable delivery of their water supply.

Santa Clara Valley Water District

The Santa Clara Valley Water District (SCVWD) manages wholesale drinking water resources for Santa Clara County and provides stewardship for the county's vast watersheds, including its reservoirs, groundwater basins, and over 700 miles of streams. The District encompasses all of the county's 1,300 square miles and serves the area's 15 cities, 1.7 million residents, and more than 200,000 commuters. SCVWD continues to be a leader in water resources management with award-winning programs in water use efficiency that are innovative and comprehensive in scope.

Solano County Water Agency

Formed in 1951, the Solano County Water Agency (Solano CWA) provides water supply and flood control activities for cities and irrigation districts in Solano County and parts of Yolo County. Solano CWA delivers untreated water to its wholesale customers who represent over 400,000 residents, in addition to its irrigation customers. Solano CWA also leads efforts to protect rights to existing sources of water and works to secure new sources of water for water supply reliability and future growth in the County.

Sonoma County Water Agency

Created in 1949, Sonoma County Water Agency (Sonoma CWA) is a water wholesaler that provides drinking water supplies to approximately 570,000 residents of Sonoma and Marin Counties. In addition, Sonoma CWA provides sanitation and flood control services to the residents of Sonoma County. Sonoma CWA is a regional leader in water resources management and was the first retail group in the state to sign the California Urban Water Conservation Council's MOU.

Zone 7 Water Agency

Zone 7 Water Agency (Zone 7) was formed in 1957 to manage groundwater, flood control, and water supplies for the Livermore-Amador Valley. Zone 7's service area includes the cities of Dublin, Livermore, Pleasanton, and the surrounding unincorporated areas, providing roughly 180,000 residents with a reliable supply of high quality water. By pursuing multiple water supply strategies and state-of-the-art technologies, Zone 7 is committed to ensuring the needs of its customers are met, even in times of drought.